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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/397,550	09/16/1999	JASON PETER BROWN	A0000180-66-	8892

28880 7590 10/27/2003

WARNER-LAMBERT COMPANY
2800 PLYMOUTH RD
ANN ARBOR, MI 48105

EXAMINER	
MURPHY, JOSEPH F	

ART UNIT	PAPER NUMBER
1646	18

DATE MAILED: 10/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/397,550	BROWN ET AL.	
	Examiner	Art Unit	
	Joseph F Murphy	1646	

-- The MAILING DATE of this communicati n appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,10-12 and 25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4, 10-12, 25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120.

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Sequence Comparison A,B,C* .

DETAILED ACTION

Formal Matters

Claims 2-4 were amended in Paper No. 17, 7/24/2003. Claims 2-4, 10-12, 25 are pending and under consideration.

Response to Amendment

The objection to the Specification and Claims has been obviated by Applicant's amendment and is thus withdrawn.

The rejection of claims 2-3, 10-12, 23-25 under 35 USC 112 first paragraph has been obviated by Applicant's amendment and is thus withdrawn.

The rejection of claims 2-3, 10-12, 23-25 under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention has been obviated by Applicant's amendment and is thus withdrawn.

The rejection of claim 4 and 23 under 35 U.S.C. 102(b) as being anticipated by Wei et al. (1998) has been obviated by Applicant's amendment and is thus withdrawn.

New issues are set forth below.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 2-4, 10-12, 25 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,441,156 (Lerman et al.). The '156 patent has a priority date of 12/30/1998.

The '156 patent discloses the cloning and expression of calcium channel subunits. The '156 patent discloses, and claims, nucleic acids which encode amino acid sequences which are 100% identical to the encoded amino acid sequence of SEQ ID NO: 20, thus the nucleic acid encoding SEQ ID NO: 20 as claimed in claim 2-3 is anticipated (see Sequence Comparison A, attached). Furthermore, the '156 patent discloses, and claims, a nucleic acid sequence 100% identical to SEQ ID NO: 1, thus claim 4 is anticipated (see Sequence Comparison B, attached). Additionally, the '156 patent discloses and claims a nucleic acid sequence 100% identical to SEQ ID NO: 3, thus anticipating claim 4 (see Sequence Comparison C, attached). The '156 patent further discloses vectors comprising the nucleic acid, host cells and methods of producing the encoded protein (column 3, lines 25-41), thus claims 10-12 are anticipated. The '156 patent further discloses nucleic acids encoding a nucleotide sequence encoding a tag (column 2, lines 30-40), thus claim 25 is anticipated.

Conclusion

No claim is allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph F. Murphy whose telephone number is 703-305-7245. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on 703-308-6564. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 for regular communications and 703-308-0294 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0196.

Joseph F. Murphy, Ph. D.
Patent Examiner
Art Unit 1646
October 21, 2003

Sequence Comparison A

RESULT 1
US-09-470-443-2
; Sequence 2, Application US/09470443
; Patent No. 6441156
; GENERAL INFORMATION:
; APPLICANT: Lerman, Michael I.
; APPLICANT: Minna, John D.
; APPLICANT: Latif, Farida
; APPLICANT: Wei, Ming-Hui
; APPLICANT: Sekido, Yoshitaka
; APPLICANT: Gao, Boning
; APPLICANT: Duh, Fuh-Mei
; TITLE OF INVENTION: Calcium Channel Compositions and Methods of Use Thereof
; FILE REFERENCE: NIH-05043
; CURRENT APPLICATION NUMBER: US/09/470,443
; CURRENT FILING DATE: 1999-12-22
; EARLIER APPLICATION NUMBER: 60/114,359
; EARLIER FILING DATE: 1998-12-30
; NUMBER OF SEQ ID NOS: 114
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 2
; LENGTH: 1145
; TYPE: PRT
; ORGANISM: Homo sapiens
US-09-470-443-2

Query Match 100.0%; Score 6089; DB 4; Length 1145;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 1145; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 MAVPARTCGASRPGPARTARPWPGCGPHPGPGTRRPTSGPPRPLWLLLPLLPLLAAPGAS 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db          1 MAVPARTCGASRPGPARTARPWPGCGPHPGPGTRRPTSGPPRPLWLLLPLLPLLAAPGAS 60

Qy         61 AYSFPQQHTMQHWARRLEQEVDGVMRIFGGVQQLREIYKDNRNLFEVQENEPQKLVEKVA 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db         61 AYSFPQQHTMQHWARRLEQEVDGVMRIFGGVQQLREIYKDNRNLFEVQENEPQKLVEKVA 120

Qy        121 GDIESLLDRKVQALKRLADAAENFQKAHRWQDNIKEEDIVYYDAKADAELDDPESEDVER 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        121 GDIESLLDRKVQALKRLADAAENFQKAHRWQDNIKEEDIVYYDAKADAELDDPESEDVER 180

Qy        181 GSKASTLRLDFIEDPNFKNKVNYSYAAVQIPTDIYKGSTVILNELNWTEALENVFMENRR 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        181 GSKASTLRLDFIEDPNFKNKVNYSYAAVQIPTDIYKGSTVILNELNWTEALENVFMENRR 240

Qy        241 QDPTLLWQVFGSATGVTRYYPATPWRAPKKIDLYDVRRRPWYIQGASSPKDMVIIVDVSG 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 QDPTLLWQVFGSATGVTRYYPATPWRAPKKIDLYDVRRRPWYIQGASSPKDMVIIVDVSG 300

Qy        301 SVSGLTLKLMKTSVCEMLDTLSDDDYVNVASFNEKAQPVSCFTHLVQANVRNKKVFKEAV 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        301 SVSGLTLKLMKTSVCEMLDTLSDDDYVNVASFNEKAQPVSCFTHLVQANVRNKKVFKEAV 360

Qy        361 QGMVAKGTTGYKAGFEYAFDQLQNSNITRANCNKMIMMFTDGGEDRVQDVFEKYNWPNRT 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        361 QGMVAKGTTGYKAGFEYAFDQLQNSNITRANCNKMIMMFTDGGEDRVQDVFEKYNWPNRT 420

Qy        421 VRVFTFSVGQHNYDVTPLQWMACANKGYYFEIPSIGAIRINTQEYLDVLGRPMVLAGKEA 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        421 VRVFTFSVGQHNYDVTPLQWMACANKGYYFEIPSIGAIRINTQEYLDVLGRPMVLAGKEA 480

Qy        481 KQVQWTNVYEDALGLGLVVTGTLPVFNLTQDGPGEKKNQLILGVMGIDVALNDIKRLTPN 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        481 KQVQWTNVYEDALGLGLVVTGTLPVFNLTQDGPGEKKNQLILGVMGIDVALNDIKRLTPN 540

Qy        541 YTLGANGYVFAIDLNGYVLLHPNLKPQTTNFREPVTLDFLDAELEDENKEEIRRSMIDGN 600
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        541 YTLGANGYVFAIDLNGYVLLHPNLKPQTTNFREPVTLDFLDAELEDENKEEIRRSMIDGN 600
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Qy        601 KGHKQIRTLVKSLDERYIDEVTRNYTWVPIRSTNYSLGLVLPPYSTFYLQANLSDQILQV 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        601 KGHKQIRTLVKSLDERYIDEVTRNYTWVPIRSTNYSLGLVLPPYSTFYLQANLSDQILQV 660

Qy        661 KYFEFLLPSSFESEGHVFIAPREYCKDLNASDNNTEFLKNFIELMEKVTPDSKQCNNFLL 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        661 KYFEFLLPSSFESEGHVFIAPREYCKDLNASDNNTEFLKNFIELMEKVTPDSKQCNNFLL 720

Qy        721 HNLILDTGITQQLVERVWRDQDLNTYSLLAVFAATDGGITRVFPNKAAEDWTENPEPFNA 780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        721 HNLILDTGITQQLVERVWRDQDLNTYSLLAVFAATDGGITRVFPNKAAEDWTENPEPFNA 780

Qy        781 SFYRRSLDNHGYVFKPPHQDALLRPLELENDTVGILVSTAVELSLGRRTLRPAVVGVKLD 840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        781 SFYRRSLDNHGYVFKPPHQDALLRPLELENDTVGILVSTAVELSLGRRTLRPAVVGVKLD 840

Qy        841 LEAWAEKFKVLASNRTHQDQPQKCGPNSHCEMDCEVNNEDLLCVLIDDGGFLVLSNQNHQ 900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        841 LEAWAEKFKVLASNRTHQDQPQKCGPNSHCEMDCEVNNEDLLCVLIDDGGFLVLSNQNHQ 900

Qy        901 WDQVGRFFSEVDANLMLALYNNSFYTRKESYDYQAACAPQPPGNLGAAPRGVFVPTVADF 960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        901 WDQVGRFFSEVDANLMLALYNNSFYTRKESYDYQAACAPQPPGNLGAAPRGVFVPTVADF 960

Qy        961 LNLAWWTSAAAWSLFQQLLYGLIYHSWFQADPAEAEGSPETRESSCVMKQTQYYFGSVNA 1020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        961 LNLAWWTSAAAWSLFQQLLYGLIYHSWFQADPAEAEGSPETRESSCVMKQTQYYFGSVNA 1020

Qy       1021 SYNAIIDCGNCSRLFHAQRLTNTNLLFVVAEKPLCSQCEAGRLLQKETHCPADGPEQCEL 1080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1021 SYNAIIDCGNCSRLFHAQRLTNTNLLFVVAEKPLCSQCEAGRLLQKETHCPADGPEQCEL 1080

Qy       1081 VQRPRYRRGPHICFDYNATEDTSDCGRGASFPPSLGVLVSLQLLLLLGLPPRPQPQVLVH 1140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1081 VQRPRYRRGPHICFDYNATEDTSDCGRGASFPPSLGVLVSLQLLLLLGLPPRPQPQVLVH 1140

Qy       1141 ASRRL 1145
              |||||
Db       1141 ASRRL 1145
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Sequence Comparison B

RESULT 1
US-09-470-443-1
; Sequence 1, Application US/09470443
; Patent No. 6441156
; GENERAL INFORMATION:
; APPLICANT: Lerman, Michael I.
; APPLICANT: Minna, John D.
; APPLICANT: Latif, Farida
; APPLICANT: Wei, Ming-Hui
; APPLICANT: Sekido, Yoshitaka
; APPLICANT: Gao, Boning
; APPLICANT: Duh, Fuh-Mei
; TITLE OF INVENTION: Calcium Channel Compositions and Methods of Use Thereof
; FILE REFERENCE: NIH-05043
; CURRENT APPLICATION NUMBER: US/09/470,443
; CURRENT FILING DATE: 1999-12-22
; EARLIER APPLICATION NUMBER: 60/114,359
; EARLIER FILING DATE: 1998-12-30
; NUMBER OF SEQ ID NOS: 114
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 1
; LENGTH: 5463
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (162)..(3599)
US-09-470-443-1

Query Match 100.0%; Score 3186; DB 4; Length 5463;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 3186; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 ATGGCGGTGCCGGCTCGGACCTGCGGCGCCTCTCGGCCCGGCCCAGCGCGGACTGCGCGC 60
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        162 ATGGCGGTGCCGGCTCGGACCTGCGGCGCCTCTCGGCCCGGCCCAGCGCGGACTGCGCGC 221

Qy         61 CCCTGGCCCGGCTGCGGCCCCCACCCTGGCCCCGGCACCCGGCGCCCGACGTCCGGGCCC 120
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        222 CCCTGGCCCGGCTGCGGCCCCCACCCTGGCCCCGGCACCCGGCGCCCGACGTCCGGGCCC 281

Qy        121 CCGCGCCCGCTGTGGCTGCTGCTGCCGCTTCTACCGCTGCTCGCCGCCCCCGGCGCCTCT 180
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        282 CCGCGCCCGCTGTGGCTGCTGCTGCCGCTTCTACCGCTGCTCGCCGCCCCCGGCGCCTCT 341

Qy        181 GCCTACAGCTTCCCCCAGCAGCACACGATGCAGCACTGGGCCCGGCGTCTGGAGCAGGAG 240
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        342 GCCTACAGCTTCCCCCAGCAGCACACGATGCAGCACTGGGCCCGGCGTCTGGAGCAGGAG 401

Qy        241 GTCGACGGCGTGATGCGGATTTTTGGAGGCGTCCAGCAGCTCCGTGAGATTTACAAGGAC 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        402 GTCGACGGCGTGATGCGGATTTTTGGAGGCGTCCAGCAGCTCCGTGAGATTTACAAGGAC 461

Qy        301 AACCGGAACCTGTTCGAGGTACAGGAGAATGAGCCTCAGAAGTTGGTGGAGAAGGTGGCA 360
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        462 AACCGGAACCTGTTCGAGGTACAGGAGAATGAGCCTCAGAAGTTGGTGGAGAAGGTGGCA 521

Qy        361 GGGGACATTGAGAGCCTTCTGGACAGGAAGGTGCAGGCCCTGAAGAGACTGGCTGATGCT 420
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        522 GGGGACATTGAGAGCCTTCTGGACAGGAAGGTGCAGGCCCTGAAGAGACTGGCTGATGCT 581

Qy        421 GCAGAGAACTTCCAGAAAGCACACCGCTGGCAGGACAACATCAAGGAGGAAGACATCGTG 480
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        582 GCAGAGAACTTCCAGAAAGCACACCGCTGGCAGGACAACATCAAGGAGGAAGACATCGTG 641

Qy        481 TACTATGACGCCAAGGCTGACGCTGAGCTGGACGACCCTGAGAGTGAGGATGTGGAAAGG 540
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        642 TACTATGACGCCAAGGCTGACGCTGAGCTGGACGACCCTGAGAGTGAGGATGTGGAAAGG 701
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Qy        541 GGGTCTAAGGCCAGCACCCTAAGGCTGGACTTCATCGAGGACCCAAACTTCAAGAACAAG 600
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Db        702 GGGTCTAAGGCCAGCACCCTAAGGCTGGACTTCATCGAGGACCCAAACTTCAAGAACAAG 761

Qy        601 GTCAACTATTCATACGCGGCTGTACAGATCCCTACGGACATCTACAAAGGCTCCACTGTC 660
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        762 GTCAACTATTCATACGCGGCTGTACAGATCCCTACGGACATCTACAAAGGCTCCACTGTC 821

Qy        661 ATCCTCAATGAGCTCAACTGGACAGAGGCCCTGGAGAATGTGTTCATGGAAAACCGCAGA 720
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        822 ATCCTCAATGAGCTCAACTGGACAGAGGCCCTGGAGAATGTGTTCATGGAAAACCGCAGA 881

Qy        721 CAAGACCCCACACTGCTGTGGCAGGTCTTCGGCAGCGCCACAGGAGTCACTCGCTACTAC 780
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        882 CAAGACCCCACACTGCTGTGGCAGGTCTTCGGCAGCGCCACAGGAGTCACTCGCTACTAC 941

Qy        781 CCGGCCACCCCGTGGCGAGCCCCCAAGAAGATCGACCTGTACGATGTCCGAAGGAGACCC 840
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        942 CCGGCCACCCCGTGGCGAGCCCCCAAGAAGATCGACCTGTACGATGTCCGAAGGAGACCC 1001

Qy        841 TGGTATATCCAGGGGGCCTCGTCACCCAAAGACATGGTCATCATCGTGGATGTGAGTGGC 900
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1002 TGGTATATCCAGGGGGCCTCGTCACCCAAAGACATGGTCATCATCGTGGATGTGAGTGGC 1061

Qy        901 AGTGTGAGCGGCCTGACCCTGAAGCTGATGAAGACATCTGTCTGCGAGATGCTGGACACG 960
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1062 AGTGTGAGCGGCCTGACCCTGAAGCTGATGAAGACATCTGTCTGCGAGATGCTGGACACG 1121

Qy        961 CTGTCTGATGATGACTATGTGAATGTGGCCTCGTTCAACGAGAAGGCACAGCCTGTGTCA 1020
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1122 CTGTCTGATGATGACTATGTGAATGTGGCCTCGTTCAACGAGAAGGCACAGCCTGTGTCA 1181

Qy       1021 TGCTTCACACACCTGGTGCAGGCCAATGTGCGCAACAAGAAGGTGTTCAAGGAAGCTGTG 1080
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1182 TGCTTCACACACCTGGTGCAGGCCAATGTGCGCAACAAGAAGGTGTTCAAGGAAGCTGTG 1241

Qy       1081 CAGGGCATGGTGGCCAAGGGCACCACAGGCTACAAGGCCGGCTTTGAGTATGCCTTTGAC 1140
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1242 CAGGGCATGGTGGCCAAGGGCACCACAGGCTACAAGGCCGGCTTTGAGTATGCCTTTGAC 1301

Qy       1141 CAGCTGCAGAACTCCAACATCACTCGGGCCAACTGCAACAAGATGATCATGATGTTCACG 1200
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1302 CAGCTGCAGAACTCCAACATCACTCGGGCCAACTGCAACAAGATGATCATGATGTTCACG 1361

Qy       1201 GATGGTGGTGAGGACCGCGTGCAGGACGTCTTTGAGAAGTACAATTGGCCAAACCGGACG 1260
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1362 GATGGTGGTGAGGACCGCGTGCAGGACGTCTTTGAGAAGTACAATTGGCCAAACCGGACG 1421

Qy       1261 GTGCGCGTGTTTACTTTCTCCGTGGGGCAGCATAACTATGACGTCACACCGCTGCAGTGG 1320
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1422 GTGCGCGTGTTTACTTTCTCCGTGGGGCAGCATAACTATGACGTCACACCGCTGCAGTGG 1481

Qy       1321 ATGGCCTGTGCCAACAAAGGCTACTATTTTGAGATCCCTTCCATCGGAGCCATCCGCATC 1380
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1482 ATGGCCTGTGCCAACAAAGGCTACTATTTTGAGATCCCTTCCATCGGAGCCATCCGCATC 1541

Qy       1381 AACACACAGGAATATCTAGATGTGTTGGGCAGGCCCATGGTGCTGGCAGGCAAGGAGGCC 1440
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1542 AACACACAGGAATATCTAGATGTGTTGGGCAGGCCCATGGTGCTGGCAGGCAAGGAGGCC 1601

Qy       1441 AAGCAGGTTCAGTGGACCAACGTGTATGAGGATGCACTGGGACTGGGGTTGGTGGTAACA 1500
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1602 AAGCAGGTTCAGTGGACCAACGTGTATGAGGATGCACTGGGACTGGGGTTGGTGGTAACA 1661

Qy       1501 GGGACCCTCCCTGTTTTCAACCTGACACAGGATGGCCCTGGGGAAAAGAAGAACCAGCTG 1560
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1662 GGGACCCTCCCTGTTTTCAACCTGACACAGGATGGCCCTGGGGAAAAGAAGAACCAGCTG 1721

Qy       1561 ATCCTGGGCGTGATGGGCATTGACGTGGCTCTGAATGACATCAAGAGGCTGACCCCCAAC 1620
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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Db       1722 ATCCTGGGCGTGATGGGCATTGACGTGGCTCTGAATGACATCAAGAGGCTGACCCCCAAC 1781

Qy       1621 TACACGCTTGGAGCCAACGGCTATGTGTTTGCCATTGACCTGAACGGCTACGTGTTGCTG 1680
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1782 TACACGCTTGGAGCCAACGGCTATGTGTTTGCCATTGACCTGAACGGCTACGTGTTGCTG 1841

Qy       1681 CACCCCAATCTCAAGCCCCAGACCACCAACTTCCGGGAGCCTGTGACTCTGGACTTCCTG 1740
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Db       1842 CACCCCAATCTCAAGCCCCAGACCACCAACTTCCGGGAGCCTGTGACTCTGGACTTCCTG 1901

Qy       1741 GATGCGGAGCTAGAGGATGAGAACAAGGAAGAGATCCGTCGGAGCATGATTGATGGCAAC 1800
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Db       1902 GATGCGGAGCTAGAGGATGAGAACAAGGAAGAGATCCGTCGGAGCATGATTGATGGCAAC 1961

Qy       1801 AAGGGCCACAAGCAGATCAGAACGTTGGTCAAGTCCCTGGATGAGAGGTACATAGATGAG 1860
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       1962 AAGGGCCACAAGCAGATCAGAACGTTGGTCAAGTCCCTGGATGAGAGGTACATAGATGAG 2021

Qy       1861 GTGACACGGAACTACACCTGGGTGCCTATAAGGAGCACTAACTACAGCCTGGGGCTGGTG 1920
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Db       2022 GTGACACGGAACTACACCTGGGTGCCTATAAGGAGCACTAACTACAGCCTGGGGCTGGTG 2081

Qy       1921 CTCCCACCCTACAGCACCTTCTACCTCCAAGCCAATCTCAGTGACCAGATCCTGCAGGTC 1980
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2082 CTCCCACCCTACAGCACCTTCTACCTCCAAGCCAATCTCAGTGACCAGATCCTGCAGGTC 2141

Qy       1981 AAGTATTTTGAGTTCCTGCTCCCCAGCAGCTTTGAGTCTGAAGGACACGTTTTCATTGCT 2040
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2142 AAGTATTTTGAGTTCCTGCTCCCCAGCAGCTTTGAGTCTGAAGGACACGTTTTCATTGCT 2201

Qy       2041 CCCAGAGAGTACTGCAAGGACCTGAATGCCTCAGACAACAACACCGAGTTCCTGAAAAAC 2100
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Qy       2101 TTTATTGAGCTCATGGAGAAAGTGACTCCAGACTCCAAGCAGTGCAACAACTTCCTTCTG 2160
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Db       2262 TTTATTGAGCTCATGGAGAAAGTGACTCCAGACTCCAAGCAGTGCAACAACTTCCTTCTG 2321

Qy       2161 CACAACCTGATCTTGGACACGGGCATCACGCAGCAGCTGGTAGAGCGTGTGTGGAGGGAC 2220
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Qy       2221 CAGGATCTCAACACGTACAGCCTACTGGCCGTGTTCGCTGCCACAGACGGTGGCATCACC 2280
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Qy       2281 CGAGTCTTCCCCAACAAGGCAGCTGAGGACTGGACAGAGAACCCTGAGCCCTTCAATGCC 2340
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Qy       2341 AGCTTCTACCGCCGCAGCCTGGATAACCACGGTTATGTCTTCAAGCCCCCACACCAGGAT 2400
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Qy       2401 GCCCTGTTAAGGCCGCTGGAGCTGGAGAATGACACTGTGGGCATCCTCGTCAGCACAGCT 2460
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Qy       2461 GTGGAGCTCAGCCTAGGCAGGCGCACACTGAGGCCAGCAGTGGTGGGCGTCAAGCTGGAC 2520
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Qy       2521 CTAGAGGCTTGGGCTGAGAAGTTCAAGGTGCTAGCCAGCAACCGTACCCACCAAGACCAG 2580
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Qy       2581 CCTCAGAAGTGCGGCCCCAACAGCCACTGTGAGATGGACTGCGAGGTTAACAATGAGGAC 2640
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Db       2742 CCTCAGAAGTGCGGCCCCAACAGCCACTGTGAGATGGACTGCGAGGTTAACAATGAGGAC 2801

Qy       2641 TTACTCTGTGTCCTCATTGATGATGGAGGATTCCTGGTGCTGTCAAACCAGAACCATCAG 2700
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Qy       2701 TGGGACCAGGTGGGCAGGTTCTTCAGTGAGGTGGATGCCAACCTGATGCTGGCACTCTAC 2760
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Db       2862 TGGGACCAGGTGGGCAGGTTCTTCAGTGAGGTGGATGCCAACCTGATGCTGGCACTCTAC 2921

Qy       2761 AATAACTCCTTCTACACCCGCAAGGAGTCCTATGACTATCAGGCAGCCTGTGCCCCTCAG 2820
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Qy       2821 CCCCCTGGCAACCTGGGTGCTGCACCCCGGGGTGTCTTTGTGCCCACCGTTGCAGATTTC 2880
                ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2982 CCCCCTGGCAACCTGGGTGCTGCACCCCGGGGTGTCTTTGTGCCCACCGTTGCAGATTTC 3041

Qy       2881 CTTAACCTGGCCTGGTGGACCTCTGCTGCCGCCTGGTCCCTGTTCCAGCAGCTTCTCTAC 2940
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Db       3102 GGCCTCATCTACCACAGCTGGTTCCAAGCAGACCCCGCGGAGGCCGAGGGGAGCCCCGAG 3161

Qy       3001 ACGCGCGAGAGCAGCTGCGTCATGAAACAGACCCAGTACTACTTCGGCTCGGTAAACGCC 3060
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Qy       3181 GGCCGG 3186
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Sequence Comparison C

RESULT 1
US-09-470-443-1
; Sequence 1, Application US/09470443
; Patent No. 6441156
; GENERAL INFORMATION:
; APPLICANT: Lerman, Michael I.
; APPLICANT: Minna, John D.
; APPLICANT: Latif, Farida
; APPLICANT: Wei, Ming-Hui
; APPLICANT: Sekido, Yoshitaka
; APPLICANT: Gao, Boning
; APPLICANT: Duh, Fuh-Mei
; TITLE OF INVENTION: Calcium Channel Compositions and Methods of Use Thereof
; FILE REFERENCE: NIH-05043
; CURRENT APPLICATION NUMBER: US/09/470,443
; CURRENT FILING DATE: 1999-12-22
; EARLIER APPLICATION NUMBER: 60/114,359
; EARLIER FILING DATE: 1998-12-30
; NUMBER OF SEQ ID NOS: 114
; SOFTWARE: PatentIn Ver. 2.0
; SEQ ID NO 1
; LENGTH: 5463
; TYPE: DNA
; ORGANISM: Homo sapiens
; FEATURE:
; NAME/KEY: CDS
; LOCATION: (162)..(3599)
US-09-470-443-1

Query Match 100.0%; Score 3327; DB 4; Length 5463;
Best Local Similarity 100.0%; Pred. No. 0;
Matches 3327; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy          1 ATGGCGGTGCCGGCTCGGACCTGCGGCGCCTCTCGGCCCGGCCCAGCGCGGACTGCGCGC 60
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Qy        121 CCGCGCCCGCTGTGGCTGCTGCTGCCGCTTCTACCGCTGCTCGCCGCCCCCGGCGCCTCT 180
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Qy        181 GCCTACAGCTTCCCCCAGCAGCACACGATGCAGCACTGGGCCCGGCGTCTGGAGCAGGAG 240
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Qy        241 GTCGACGGCGTGATGCGGATTTTTGGAGGCGTCCAGCAGCTCCGTGAGATTTACAAGGAC 300
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Qy        541 GGGTCTAAGGCCAGCACCCTAAGGCTGGACTTCATCGAGGACCCAAACTTCAAGAACAAG 600
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Qy        601 GTCAACTATTCATACGCGGCTGTACAGATCCCTACGGACATCTACAAAGGCTCCACTGTC 660
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Db        762 GTCAACTATTCATACGCGGCTGTACAGATCCCTACGGACATCTACAAAGGCTCCACTGTC 821

Qy        661 ATCCTCAATGAGCTCAACTGGACAGAGGCCCTGGAGAATGTGTTCATGGAAAACCGCAGA 720
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Qy        841 TGGTATATCCAGGGGGCCTCGTCACCCAAAGACATGGTCATCATCGTGGATGTGAGTGGC 900
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Db       1002 TGGTATATCCAGGGGGCCTCGTCACCCAAAGACATGGTCATCATCGTGGATGTGAGTGGC 1061

Qy        901 AGTGTGAGCGGCCTGACCCTGAAGCTGATGAAGACATCTGTCTGCGAGATGCTGGACACG 960
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Qy        961 CTGTCTGATGATGACTATGTGAATGTGGCCTCGTTCAACGAGAAGGCACAGCCTGTGTCA 1020
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Db       1122 CTGTCTGATGATGACTATGTGAATGTGGCCTCGTTCAACGAGAAGGCACAGCCTGTGTCA 1181

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Qy       1081 CAGGGCATGGTGGCCAAGGGCACCACAGGCTACAAGGCCGGCTTTGAGTATGCCTTTGAC 1140
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Qy       1201 GATGGTGGTGAGGACCGCGTGCAGGACGTCTTTGAGAAGTACAATTGGCCAAACCGGACG 1260
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Db       1362 GATGGTGGTGAGGACCGCGTGCAGGACGTCTTTGAGAAGTACAATTGGCCAAACCGGACG 1421

Qy       1261 GTGCGCGTGTTTACTTTCTCCGTGGGGCAGCATAACTATGACGTCACACCGCTGCAGTGG 1320
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Db       1422 GTGCGCGTGTTTACTTTCTCCGTGGGGCAGCATAACTATGACGTCACACCGCTGCAGTGG 1481

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Db       1542 AACACACAGGAATATCTAGATGTGTTGGGCAGGCCCATGGTGCTGGCAGGCAAGGAGGCC 1601

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Db       1662 GGGACCCTCCCTGTTTTCAACCTGACACAGGATGGCCCTGGGGAAAAGAAGAACCAGCTG 1721

Qy       1561 ATCCTGGGCGTGATGGGCATTGACGTGGCTCTGAATGACATCAAGAGGCTGACCCCCAAC 1620
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Db       1962 AAGGGCCACAAGCAGATCAGAACGTTGGTCAAGTCCCTGGATGAGAGGTACATAGATGAG 2021

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Db       2262 TTTATTGAGCTCATGGAGAAAGTGACTCCAGACTCCAAGCAGTGCAACAACTTCCTTCTG 2321

Qy       2161 CACAACCTGATCTTGGACACGGGCATCACGCAGCAGCTGGTAGAGCGTGTGTGGAGGGAC 2220
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Db       2322 CACAACCTGATCTTGGACACGGGCATCACGCAGCAGCTGGTAGAGCGTGTGTGGAGGGAC 2381

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Qy       2281 CGAGTCTTCCCCAACAAGGCAGCTGAGGACTGGACAGAGAACCCTGAGCCCTTCAATGCC 2340
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Qy       2341 AGCTTCTACCGCCGCAGCCTGGATAACCACGGTTATGTCTTCAAGCCCCCACACCAGGAT 2400
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Db       2502 AGCTTCTACCGCCGCAGCCTGGATAACCACGGTTATGTCTTCAAGCCCCCACACCAGGAT 2561

Qy       2401 GCCCTGTTAAGGCCGCTGGAGCTGGAGAATGACACTGTGGGCATCCTCGTCAGCACAGCT 2460
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Db       2562 GCCCTGTTAAGGCCGCTGGAGCTGGAGAATGACACTGTGGGCATCCTCGTCAGCACAGCT 2621

Qy       2461 GTGGAGCTCAGCCTAGGCAGGCGCACACTGAGGCCAGCAGTGGTGGGCGTCAAGCTGGAC 2520
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Db       2622 GTGGAGCTCAGCCTAGGCAGGCGCACACTGAGGCCAGCAGTGGTGGGCGTCAAGCTGGAC 2681

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Db       2682 CTAGAGGCTTGGGCTGAGAAGTTCAAGGTGCTAGCCAGCAACCGTACCCACCAAGACCAG 2741

Qy       2581 CCTCAGAAGTGCGGCCCCAACAGCCACTGTGAGATGGACTGCGAGGTTAACAATGAGGAC 2640
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Db       2922 AATAACTCCTTCTACACCCGCAAGGAGTCCTATGACTATCAGGCAGCCTGTGCCCCTCAG 2981

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             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       2982 CCCCCTGGCAACCTGGGTGCTGCACCCCGGGGTGTCTTTGTGCCCACCGTTGCAGATTTC 3041

Qy       2881 CTTAACCTGGCCTGGTGGACCTCTGCTGCCGCCTGGTCCCTGTTCCAGCAGCTTCTCTAC 2940
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3042 CTTAACCTGGCCTGGTGGACCTCTGCTGCCGCCTGGTCCCTGTTCCAGCAGCTTCTCTAC 3101

Qy       2941 GGCCTCATCTACCACAGCTGGTTCCAAGCAGACCCCGCGGAGGCCGAGGGGAGCCCCGAG 3000
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3102 GGCCTCATCTACCACAGCTGGTTCCAAGCAGACCCCGCGGAGGCCGAGGGGAGCCCCGAG 3161

Qy       3001 ACGCGCGAGAGCAGCTGCGTCATGAAACAGACCCAGTACTACTTCGGCTCGGTAAACGCC 3060
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3162 ACGCGCGAGAGCAGCTGCGTCATGAAACAGACCCAGTACTACTTCGGCTCGGTAAACGCC 3221

Qy       3061 TCCTACAACGCCATCATCGACTGCGGAAACTGCTCCAGGCTGTTCCACGCGCAGAGACTG 3120
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3222 TCCTACAACGCCATCATCGACTGCGGAAACTGCTCCAGGCTGTTCCACGCGCAGAGACTG 3281

Qy       3121 ACCAACACCAATCTTCTCTTTGTGGTGGCCGAGAAGCCGCTGTGCAGCCAGTGCGAGGCT 3180
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3282 ACCAACACCAATCTTCTCTTTGTGGTGGCCGAGAAGCCGCTGTGCAGCCAGTGCGAGGCT 3341

Qy       3181 GGCCGGCTGCTGCAGAAGGAGACGCACTGCCCAGCGGACGGCCCGGAGCAGTGTGAGCTA 3240
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3342 GGCCGGCTGCTGCAGAAGGAGACGCACTGCCCAGCGGACGGCCCGGAGCAGTGTGAGCTA 3401

Qy       3241 GTGCAGAGACCGCGATACCGGAGAGGCCCGCACATCTGCTTCGACTACAACGCGACAGAA 3300
             ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db       3402 GTGCAGAGACCGCGATACCGGAGAGGCCCGCACATCTGCTTCGACTACAACGCGACAGAA 3461

Qy       3301 GATACCTCAGACTGTGGCCGCGGGGCC 3327
             ||||||||||||||||||||||||||||
Db       3462 GATACCTCAGACTGTGGCCGCGGGGCC 3488
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